INTEGRATED ENGINEERING SOLUTION

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The Introduction of Indirect Gas-fired Desiccant Dehumidifier

In south-east asia, high humidity causes many problems such as metallic corrosion, mold growth, food spoilage, and diseases. Particularly during the summer period, where the indoor relative humidity can reach 70% and above.

Buildings such as medical centre, data centre, hotels, commercial buildings, electronic production facilities, and warehouse relative humidity need to be controlled and maintained at a particular range at all-time, enabling machinery can operate at its optimal efficiency and increase its longevity. ARO Indirect-Fired Desiccant Dehumidifier will be an efficient solution to them.

Methods for "Drying"

Desiccant Dehumidifier has proven to be effective in controlling indoor humidity and could operate in conditions where conventional dehumidifier method could hardly achieve, for example, at low supply temperature.

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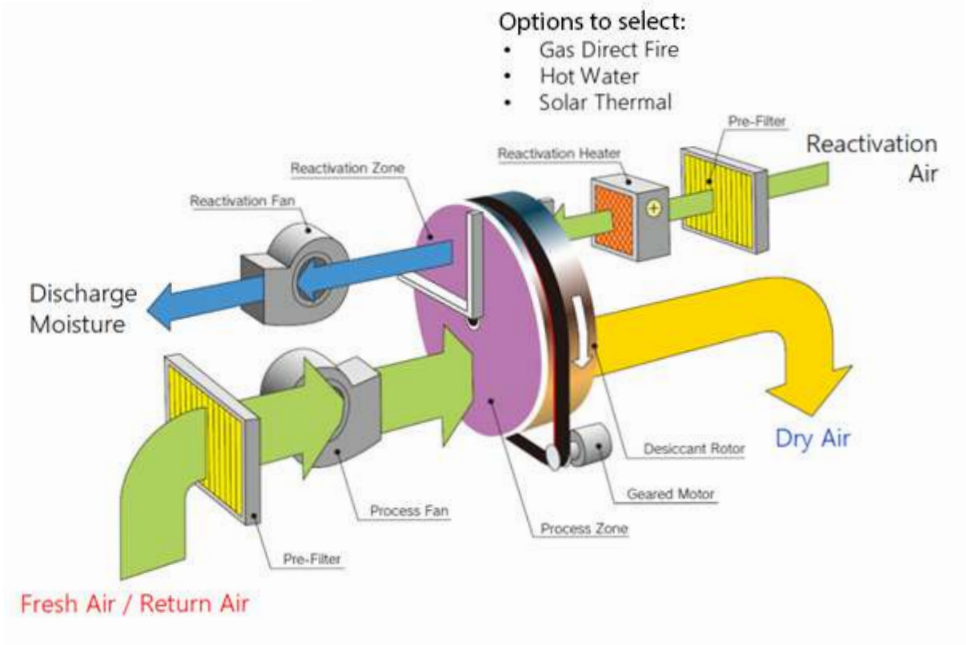
A Desiccant Dehumidifier contains a radiator, desiccant wheel which is silica gel honeycomb structured, blower, air filter, drive belt, damper, rotor, and heating coils as shown below. It can be divided into two streams, the "Dry Air Stream", where the pre-treated air (Supply/ Return Air) is being dehumidified and the "Reactivation Air Stream", where the desiccant is being dried and reactivated.



Basic Schematic

In operation, the desiccant wheel rotates continuously at a relatively low speed to absorb moisture in the pre-treated air within the "dry air stream". The pre-treated air is circulated by the process fan, passing through the desiccant wheel for dehumidification and supplied to the designated area. The wet rotating desiccant wheel is then dried in the "reactivation air stream" by the heated reactivation air, in most cases reactivation air is the return air. Similar to the "dry air stream", reactivation air is circulated and heated by the reactivation fan and heater, respectively. The heated air dries the wet desiccant wheel by passing through it then discharged to the outdoors. The advantage of the desiccant wheel is the flexibility of heat source, from gas direct fire to hot water, project dependent. The desired dew point is achieved by controlling the desiccant wheel rotational speed and the air flow rates.

Why should we choose Indirect-Fired Desiccant Dehumidifier?

It is a safer alternative to replace direct fire desiccant unit in concern of possible CO^2 leakage in the supply air stream. In Indirect-Fired Desiccant

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Dehumidifier, combustion is performed in the combustion chamber, with double-wall insulation isolating the supply air stream and combustion chamber. Then the reactivation air is heated by performing heat transfer with the Heat Transfer Tube Bundle. The air stream is heated indirectly, and is completely isolated from the combustion chamber, reducing the risk of contamination.

What's Next

The Introduction of Fuel Cell